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A review of the Holarctic genus *Tmeticus* Menge, 1868 (Araneae, Linyphiidae), with a description of a new genus

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Abstract

Eight species attributed to *Tmeticus* are reviewed; five are redescribed and illustrated: *T. affinis* (Blackwall, 1885), *T. bipunctis* (Bösenberg & Strand, 1906), *T. nigriceps* Kulczyński, 1916, *T. ornatus* (Emerton, 1914) and *T. tolli* Kulczyński, 1908. The new genus, *Paratmeticus* gen. n. is erected for *T. bipunctis,* and a new combination is established: *Paratmeticus bipunctis* (Bösenberg & Strand, 1906), **comb. n**. Three species names: *Gongylidium vile* Kulczyński, 1885, **syn. n**., *Tmeticus difficilis* Kulczyński, 1926, **syn. n**. and *T. dubius* Kulczyński, 1926, **syn. n**., are synonymized with *T. tolli* Kulczyński, 1908. Although *G. vile* has date priority over *T. tolli* it is synonymized because of the lack of usage. Three species from Japan attributed to *Tmeticus*: *T. neserigonoides* Saito & Ono, 2001, *T. nigerrimus* Saito & Ono, 2001 and *T. vulcanicus* Saito & Ono, 2001 are not related to *T. affinis*, the type species of the genus, and their affinities remain unclear. The male of *T. nigriceps* is described for the first time.

Keywords

spiders, Erigoninae, Palaearctic, Nearctic, new synonym, new combination

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Introduction

Tmeticus is a small Erigoninae genus with nine species restricted to the Holarctic Region (Platnick 2010). Members of this genus can be easily recognized by their elongate male palp with a small bulbus and a ventral tooth on the patella. Only the type species of the genus, *T. affinis* (Blackwall, 1855), occurs both in the Palaearctic and Nearctic Regions. One species, *T. ornatus* (Emerton, 1914), is restricted to the Nearctic Region. All other species have been recorded from Asia. The highest species diversity of the genus is in Japan, as a result of three recently described species.

While studying the Siberian and Far Eastern Linyphiidae, we encountered certain difficulties in identifying *Tmeticus* species. Only two of the four species occurring in northern Asia, *T. affinis* (Blackwall, 1885) and *T. tolli* Kulczyński, 1908, were properly illustrated. Thus, the main purposes of this study are to provide diagnostic illustrations for each Asian species and to describe a new genus.

Material and methods

Pictures of the general appearance and copulatory organs were made using an Olympus SZX16 stereomicroscope, with an Olympus E-520 camera, and prepared using CombineZM software. Photographs were taken in dishes of different sizes with paraffin in the bottom. Different sized holes were made in the bottom to retain the specimens in the desired position. Scanning electron micrographs were made using a SEM JEOL JSM-5200 scanning microscope. SEM and digital photographs were made in the Zoological Museum, University of Turku. The terminology of the copulatory organs follows Hormiga (2000). The smallest and biggest specimens are reported, all measurements are in millimetres.

Abbreviations

IBPN Institute for Biological Problems of the North, Russian Academy of Sciences, Magadan (curator Yu.M. Marusik).

PSU Department of Zoology, Perm State University (curator S.L. Esyunin).

ZMMU Zoological Museum of the Moscow State University (curator K.G. Mikhailov).

ZMUT Zoological Museum, University of Turku (curator S. Koponen).

Tmeticus Menge, 1868

Type species. *Tmeticus leptocaulis* Menge, 1868 (= *T. affinis* (Blackwall, 1855)).

Diagnosis. Males of this genus are easily recognized by possessing a mastidion (large tooth on frontal part of chelicera) and by their elongate palp with patella longer than cymbium, ventral terminal tooth on patella, and thin bulbus (as wide as terminal

part of tibia). Females are recognized by their flat epigyne without a cavity. Males may be confused only with the trans-Palaearctic *Hylyphantes graminicola* (Sundevall, 1830) because it also has a mastidion and a patellar tooth. However, the males of *Hylyphantes* have shorter palp, undivided embolic division and screw-like embolus.

The females of *Tmeticus* may be confused with those of several genera, such as *Oedothorax* Bertkau, 1883 or with *Donacochara speciosa* (Thorell, 1875). However, *Oedothorax* females have a different colour pattern, and *D. speciosa* is notably larger.

Description. Small to medium-sized (2.5–4.1), light to dark-coloured erigonines. Male carapace unmodified and without sulci, it may be uniformly coloured or with a darker cephalic region. Abdomen unmodified, dark, of uniform colour. Male chelicera modified by possessing a mastidion (*Ma*, promarginal tooth). Maxilla with apical-retrolateral spine. Tibial spines 2-2-1-1. TmIV present. TmI 0.65–0.8. Male palp elongate. Femur, patella and tibia longer than wide. Patella with conical, ventral terminal tooth (*Tt*). Tibia with two apophyses (*Ta*). Paracymbium large, with or without (*T. affinis*) distinct apical pocket. Tegulum with distinct sac (*Ts*) and large (*T. tolli*) or small protegulum (*Pt*). Radix with straight apical process (*Ap*), tailpiece (*Tp*) without extension, embolus (*Em*) short and straight, or long and forming a semicircle; embolic membrane (*Me*) large. Epigyne without distinct fovea or openings. Median (=dorsal, *sensu* Hormiga 2002) plate plain or with ridges.

Composition. According to Platnick's (2010) catalogue eight species are listed in this genus: *T. affinis* (Blackwall, 1855) (Holarctic), *T. bipunctis* (Bösenberg & Strand, 1906) (Far East Asia), *T. neserigonoides* Saito & Ono, 2001 (Japan), *T. nigerrimus* Saito & Ono, 2001 (Japan), *T. nigriceps* (Kulczyński, 1916) (Northern Siberia), *T. ornatus* (Emerton, 1914) (USA & Canada), *T. tolli* Kulczyński, 1908 (Siberia) and *T. vulcanicus* Saito & Ono, 2001 (Japan). In fact, there are three more species names within this genus: *T. difficilis* Kulczyński, 1926, *T. dubius* Kulczyński, 1926 and *Gongylidium vile* Kulczyński, 1885. Of these, the first two are listed under *Centromerus,* and the last one under *Oedothorax.* These three names were included in *Tmeticus* by Holm (1973) and Eskov (1994) but were considered as synonyms of *T. tolli.*

On the basis of the present study, we conclude that *Tmeticus* encompasses four species: *T. affinis, T. nigriceps, T. ornatus* and *T. tolli.* A new genus has been erected for *T. bipunctis*. *Tmeticus neserigonoides* might be correctly placed in this genus, but as we failed to re-examine its specimens, we treat it as *incertae sedis* (see below). Two other Japanese species belong elsewhere, but their correct assignments require further study.

Comments. *Tmeticus* is unusual in the Erigoninae because all its species can be recognized by their carapace colour pattern. Three sibling species: *T. nigriceps, T. ornatus* and *T. tolli* cannot be recognized by their embolic division, but the females of these species have distinctly different epigynes.

Interrelationships. *T. affinis* differs from the three other species by the shape of the paracymbium, the straight embolus and the high protegulum with papillae. It also possesses a different type of the tibial apophysis, not originating at the terminal edge of the tibia as in other Erigoninae and other *Tmeticus,* but slightly aside of the edge.

Relationships. In general appearance, male palp structure and cheliceral dentition, the members of this genus are similar to *Hylyphantes graminicola*, but the latter has a different type of embolic division and epigyne. When Wiehle (1956) described *Donacochara speciosa* (Thorell, 1875) he compared it with *T. affinis*. Both species have a long palp, small bulbus, and the chelicera of the male has a mastidion. The embolic division in both species is rather similar, but the radical process and the embolus proper occupy different positions.

The embolic division of *Tmeticus* is similar to those in *Phaulothrix hardyi* (Blackwall, 1850) (cf. Millidge 1977: f. 18), *Lophomma punctatum* (Blackwall, 1841) (Fig. 58) or members of *Oreoneta* Chyzer & Kulczyński, 1894 (Fig. 57). All these genera have a more or less straight, two-armed embolic division (embolus proper + anterior radical process), with the embolus proper situated more dorsally than the process. All three genera have a wide embolic membrane.

Millidge (1977) placed *Tmeticus* in a separate nominative group with *Ostearius* Hull, 1911, *Donacochara* Simon, 1884, *Eboria* Falconer, 1910 and *Sciastes* Bishop & Crosby, 1938. Hormiga (2002) placed *Tmeticus* close to a very heterogeneous group of the higher Erigoninae that includes such unrelated genera (in terms of the structure of the embolic division) as *Walckenaeria* Blackwall, 1833 (twisted radix), *Oedothorax*, *Entelecara* Simon, 1884, *Gonatium* Menge, 1968 and others.

Judging from the drawings (Figs 35.110, 35.111 in Draney and Buckle 2005), *Tmeticus* can be related to the Nearctic *Nanavia monticola* Chamberlin & Ivie, 1933. The latter species seems to have been mistakenly considered a synonym of *Leptorhoptrum robustum* (Westring, 1851) (see Platnick 2010). Both genera and species were synonymized by Eskov and Marusik (1994) on the basis of a comparison of *L. robustum* and the poor figures of *N. monticola*. *N. monticola* has a very long palpal tibia, and the paracymbium and embolic division are very similar to those of *T. affinis*. The relationships of the two genera and taxonomic status of *Nanavia* Chamberlin & Ivie, 1933 are outside the scope of this study and will be considered elsewhere.

Key to *Tmeticus* species

The males of *T. nigriceps* and *T. ornatus* cannot be distinguished.

1. Carapace uniformly coloured (Figs 10–11, 25–26) **2**
– Cephalic part darker than red/orange thoracic part (Figs 21–24) **3**
2. Carapace red, orange/yellow; occurs in Siberia and the Far East..... ***T. tolli***
– Carapace reddish brown, with slightly lighter posterior part (Figs 10–11), tibia with two small claw-like apophyses (Figs 1–2, 5, 7), median plate of epigyne square-shaped (Figs 4, 8–9, 19); distributed throughout the Holarctic . ..... ***T. affinis***
3. Cephalic part dark brown (Figs 23–24), epigyne with extended median plate (Figs 18, 43–44); occurs in the tundra zone of Siberia ..... ***T. nigriceps***
– Cephalic part brown (Figs 21–22), epigyne without extension (Figs 17, 47, 48); occurs in southern Canada and the northern United States.... ***T. ornatus***

Species survey

***Tmeticus affinis* (Blackwall, 1855)**
Figs 1–11, 19, 49, 61

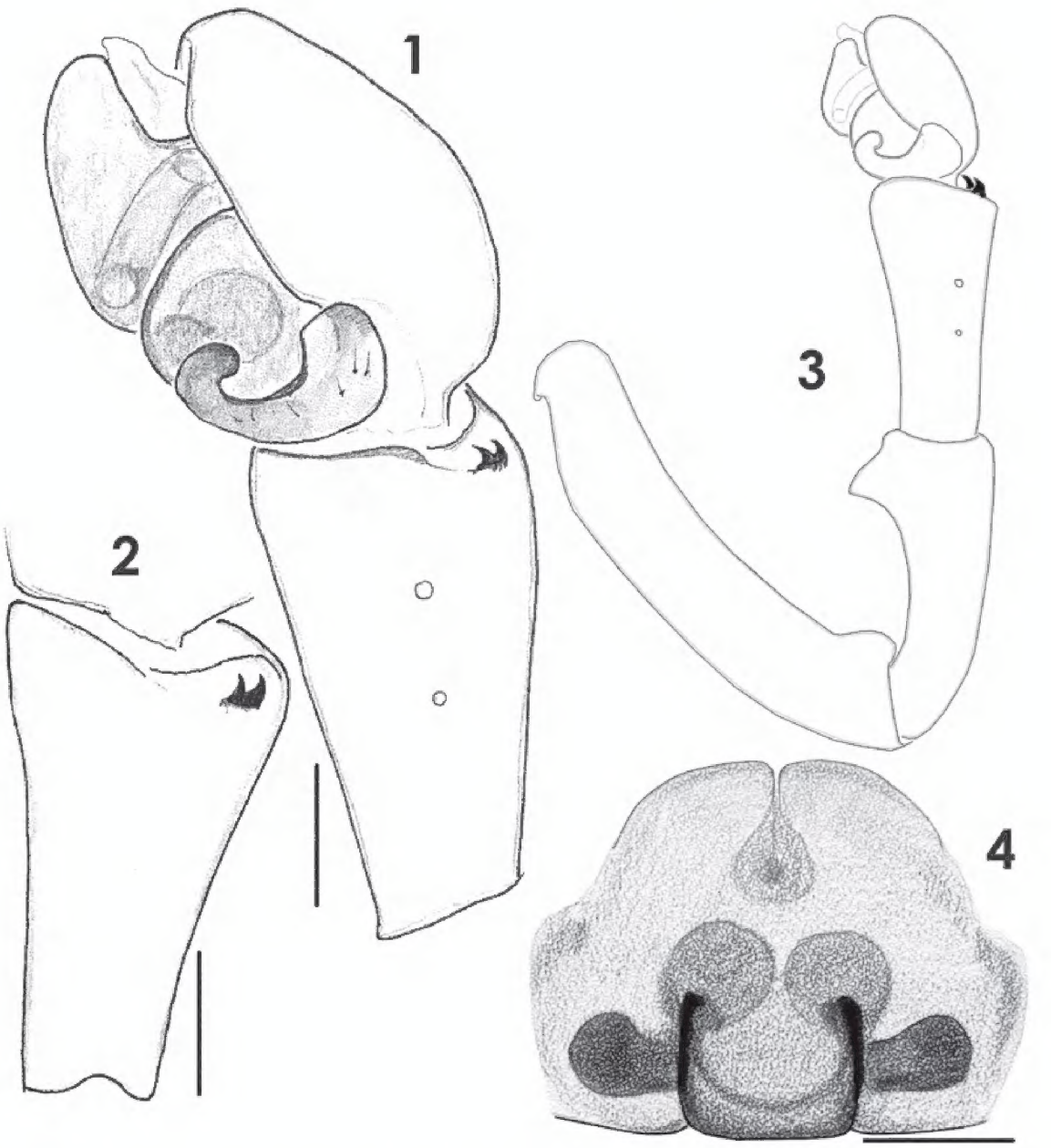
Neriene a. Blackwall, 1855: 121 (D♂).
T. a.: Wiehle, 1960: 411, f. 751–756 (♂♀).
T. a.: Merrett, 1963: 410, f. 83A-C (♂).
T. a.: Millidge, 1977: 37, f. 150 (♂).
T. a.: Roberts, 1987: 44, f. 12e (♂♀).
T. a.: Millidge, 1993: 147, f. 32 (♀).
For a complete set of references see Platnick (2010).

Material examined. FINLAND: 2♀ (ZMUT), Turku Ruissalo, 14.11.1966 (M. Saaristo); 2♀ (ZMUT), Turku Ruissalo, sea shore litter, 27.10.1966 (M. Saaristo); 1♂ (ZMUT) Turku Hirvensalo Illoinen, 30.5.1966 (P.T. Lehtinen); 1♀ (ZMUT), Turku Kärsämöki Pomponrahka, 30.05.1967 (M. Saaristo); 1♀ (ZMUT) Pori Yyteri, 16.10.1966 (M. Saaristo); 1♀ (ZMUT), Pudasjärvi Hirvaskoski, 12.08.1959 (P.T. Lehtinen); 1♂ (ZMUT), Kuusamo Torankijärvi, 7.7.1966 (M. Saaristo); 1♀ (ZMUT), Kajaani, Koutaniemi, 16.07.1972 (P.T. Lehtinen); 1♂ (ZMUT) Inari Repojoki, 9.7.1961 (O.V. Lindqvist); 1♀ (ZMUT) Utsjoki Kevo, birch forest on lake shore, 20.06.-20.07.1970 (E.T. Linnaluoto). RUSSIA: ***Krasnoyarsk*** Province, 1♂ 2♀ (ZMMU), Mirnoye, Yenisei River left bank, 23.06.1978 (K.Yu.Eskov); 2♀ (ZMMU), Mirnoye, Yenisei River left bank, 27.07.1979 (K.Yu. Eskov). ***Yakutia***, 2♂ 2♀ (ZMUT), El'gyay, big "alas" pond, 24.07.1977 (S. Koponen); 1♂ (ZMMU), western Yakutia, Kempendyay River 80 km up stream from the mouth, riverside meadow, 1–15.08.1988 (K.Yu. Eskov). ***Kamchatka*** Peninsula, 1♂ 1♀ (IBPN), Talovskoye Lake, Kuyul River, 16.08.1990 (M.B. Skopets). ***Chukotka*:** 1♂ (ZMMU), Markovo, July 1986 (G. Chernova). CANADA, ***Alberta*:** 1♂ (only the photo provided by D.J. Buckle has been studied), Caribou Mountain Wildlands, Wentzel Lake, 50°02'N, 114°28'W, sweeping horsetail meadow, 16.07.2003 (T. Johnson).

Diagnosis. This species is easily recognized by its brownish carapace with a darker cephalic region. Males are easily recognized by their palp, which has a characteristic tibial apophysis and embolic division with the anterior radical process equal in length to the embolus proper (embolus longer than anterior radial process in other species). Females are easily recognized by the shape of the epigyne.

Description. For detailed description see Wiehle (1960). ♀ 2.5–3.0, ♂ 2.5–2.8. TmI 0.65–0.75. Carapace reddish brown, rather dark in males. Cephalic region slightly darker than thoracic, but there is no clear demarcation between the two. Abdomen black. Legs orange-brown. Palp as in Figs 1–3, 5–7, 49, 61; epigyne as in Figs 4, 8–9, 19.

Distribution. This species is known all over Eurasia, from western Europe to Kamchatka. In the Nearctic Region, it has been reported from Alberta (Nordstrom & Buckle 2006).



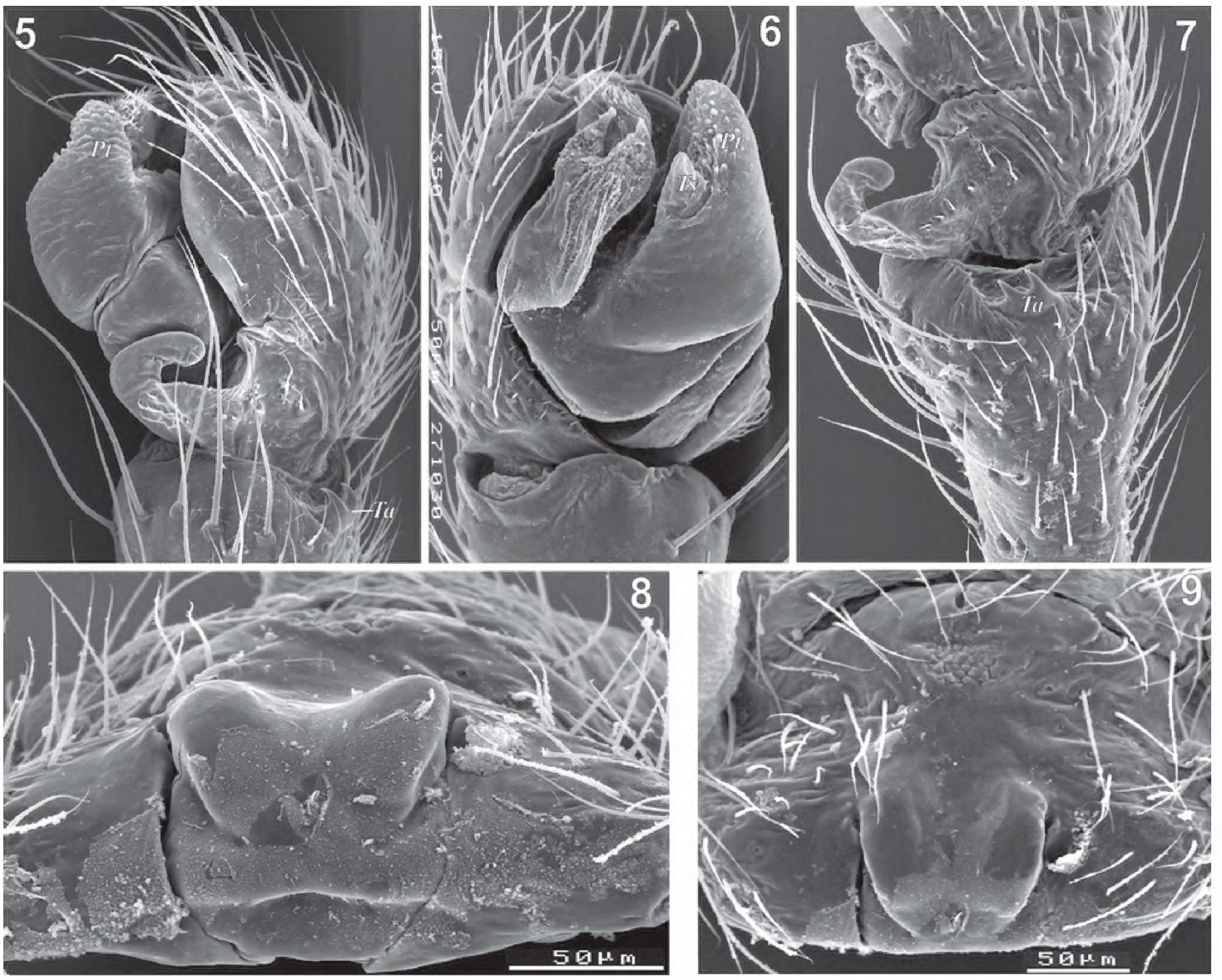
Figures 1–4. Copulatory organs of *Tmeticus affinis*. **1** male palp, retrolateral view **2** palpal tibia, dorsolateral view **3** whole male palp, retrolateral view **4** epigyne, ventral view. (scale bar 0.1 mm).

Tmeticus tolli Kulczyński, 1908

Figs 15–16, 20, 25–34, 50, 56

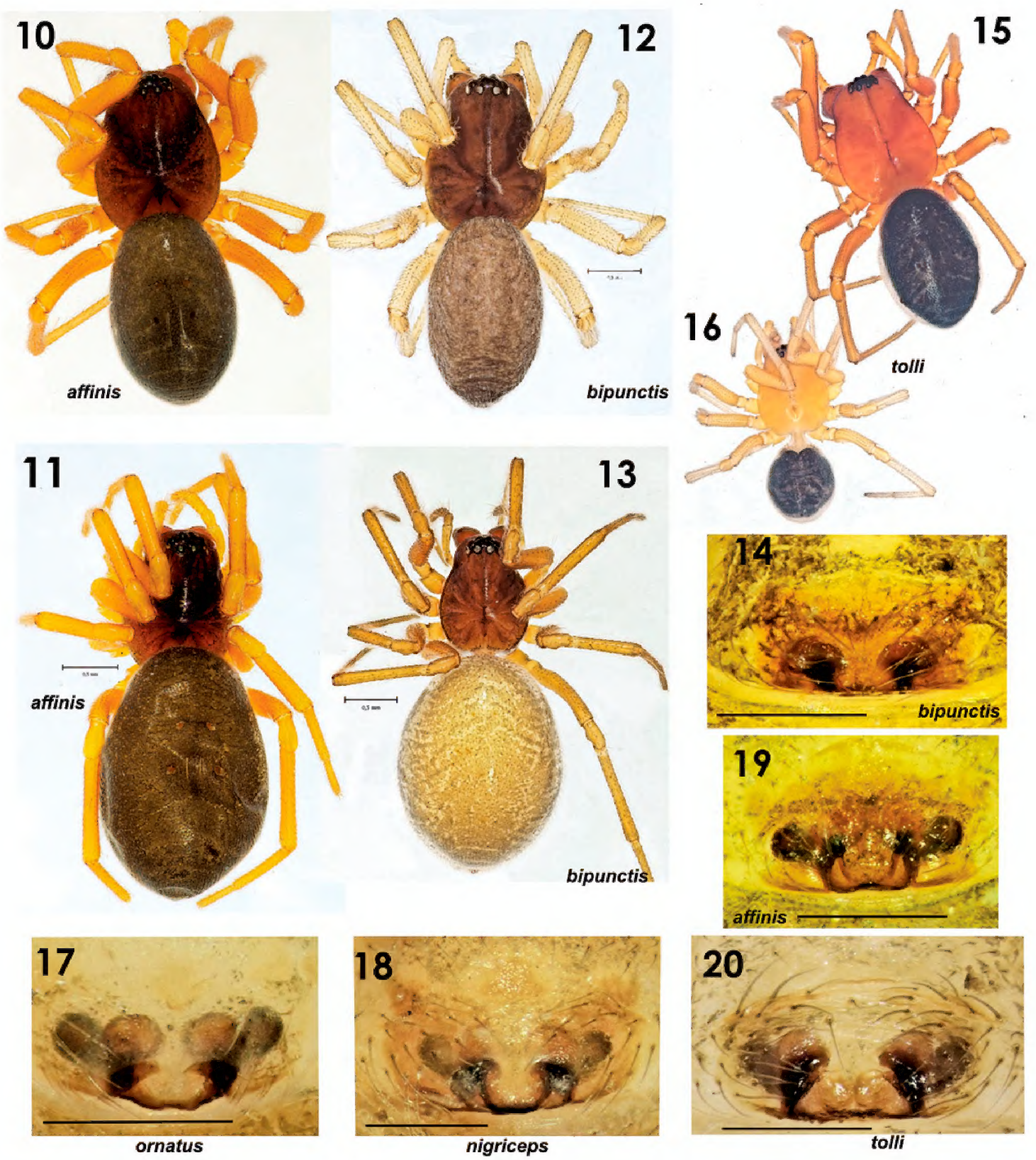
Gongylidium vile Kulczyński, 1885: 37, pl. 10, f. 16 (♀), syn. n.
T. t. Kulczyński, 1908: 15, pl. 1, f. 3, 7–8, 22–23 (♂♀).
T. difficilis Kulczyński, 1926: 50 (♀), syn. n.
T. dubius Kulczyński, 1926: 49 (♀), syn. n.
Centromerus t.: Sytshevskaja, 1935: 90.
T. t.: Holm, 1973: 89.
T. t.: Eskov, 1994: 107.
T. t.: Hormiga, 2000: 56, f. 29A-I, pl. 67A-F, 68A-F (♂♀).
T. affinis: Marusik & Logunov, 1999: 245 (misidentification).

Material examined. RUSSIA: **Krasnoyarsk** Province: 1♂ 2♀ (ZMMU), Mirnoye, Yenisei River left bank, 23.06.1978 (K.Yu. Eskov). **Evenkiya:** 40♂♀ (ZMMU), Tai-



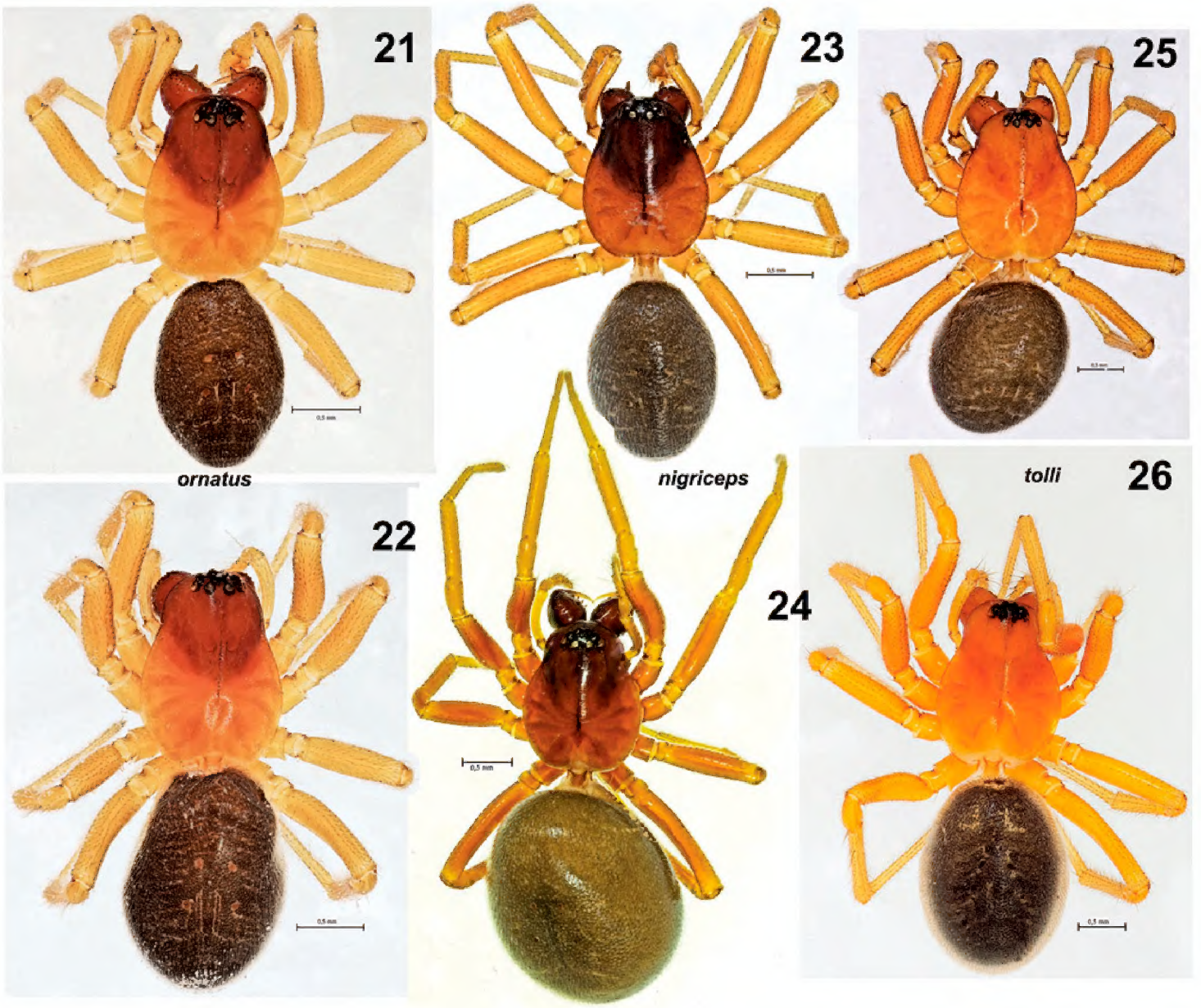
Figures 5–9. Copulatory organs of *Tmeticus affinis*. **5** male palp, retrolateral view **2** male palp, prolateral view **7** male palp, dorsal view **8** epigyne, caudal view **9** epigyne, ventral view. Abbreviations: ***Pt*** – protegulum; ***Ta*** – tibial apophysis; ***Ts*** – tegular sac.

mura River, Neptene River mouth, riparian spruce forest with alder, Summer 1982 (K.Yu. Eskov); 2♀ (ZMMU), Chambe River mouth, meteorological station "Kerbo", floodplain willow stand, litter, 21.08.1982 (K.Yu. Eskov). ***Khabarovsk*** Province: 2♀ (IBPN), Okhotski Dist., Gyrbykan R. (Ul'ya River basin), 20.08–15.09.1986 (I.D. Sukatcheva); 1♂ 3♀ (IBPN), Khetana River (tributary of Amka River, Ulya River basin), Agust 1985 (V.V. Zherikhin). ***Maritime*** Prov.: 3♂ 2♀ (IBPN), [05], Khanka Lake CW shore, Sosnovy Isl & peninsula nearby, 44°52'N 132°07'E, 17.07.1998 (Yu.M. Marusik). 1♀ (IBPN), [03], Khanka Lake, CE shore, 44°39'N 132°34'E, 15–16.07.1998 (Yu.M. Marusik). ***Magadan*** Area: 3♂ 2♀ (IBPN), Motykley Bay, 59°30'N 148°50'E, Summer 1994 (E. Izergina); 1♂ 1♀ (IBPN), 137th km of Kolyma Hwy, 60°25'N 151°30'E, Ola River, valley forest, 28.09.1994 (Yu.M. Marusik); 1♂ 2♀ (IBPN), ca 50 km N of Magadan, Khasyn River, environs of Splavnaya Vil., 28.05.1988 (Yu.M. Marusik); 25♂♀ (IBPN), 30km N of Magadan, Snow Valley Vil., Dukcha River valley, 7.10.1984 (Yu.M. Marusik). ***Sakhalin*** Island: 1♂ 6♀ (IBPN), Okha Dist., Ten'ga River, May 1987 (A.M. Basarukin); 4♀ (IBPN), Tomari Dist., Ainskoye Lake, Ptichya river, 24.05.-10.06.1984 (A.M. Basarukin); 1♀ CE part, Leonidovka River, 8 km SE of Leonidovo Vil., 49°16.506'N 142°58.390'E,



Figures 10–20. Habitus and epigyne of *Tmeticus affinis* (**10–11, 19**), *Paratmeticus bipunctis* (**12–14**), *Tmeticus tolli* (**15–16, 20**), *T. ornatus* (**17**) and *T. nigriceps* (**18**). **10, 12, 14–16** male habitus, dorsal view **11, 13** female general appearance, dorsal view **14, 17–20** epigyne, ventral view **15–16** difference in the size between males from the same sample. (scale bar 0. 2 mm, if not otherwise indicated).

9.08.2001 (Yu.M. Marusik). ***Kamchatka*** Peninsula: 2♀ (ZMMU), 40 km from Ust'-Kamchatsk, 09.1973 (A.S. Glikman); 1♂ 4♀ (IBPN), 10–12 km N of Paratunka Vil., Yelizovo Forestry, 53.050°N 158.225°E, 15–28.07.2004 (A.S. Ryabukhin). MONGOLIA: ***Arkhangai*** Aimak: 2♂ 2♀ (IBPN) [12], Ondrer-Ulaan, Tsakhir, Chulut gorge 48°07'N 100°22'E, 2100 m, 10–13.06.1997 (Yu.M. Marusik). ***Central*** (=***Tov***) Aimak: 1♀ (IBPN), Terelzh Mt., south exposed slope (about 80 km NE of Ulan-Bator, 1988 (S. Heimer).

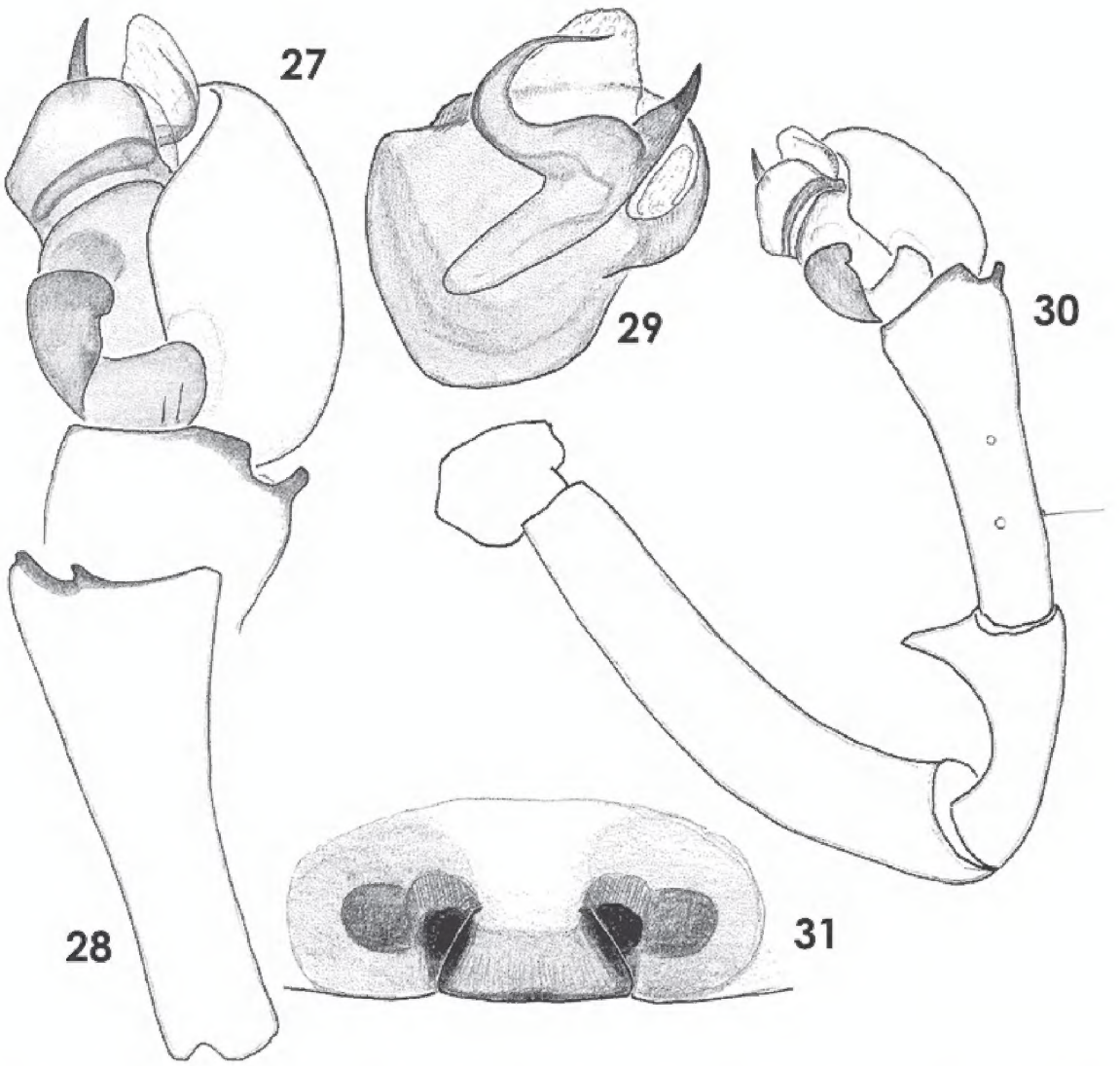


Figures 21–26. Habitus of *Tmeticus ornatus* (**21–22**), *T. nigriceps* (**23–24**) and *T. tolli* (**25–26**). **21, 23, 25** male, dorsal view **22, 24, 26** female, dorsal view.

Diagnosis. *T. tolli* is easily distinguished from the similar *T. ornatus* and *T. nigriceps* by having a uniformly coloured carapace in both sexes.

Description. Both sexes were described in detail by Hormiga (2000). ♀ 2.8–4.1, ♂ 2.5–3.1. TmI 0.68–0.8. Carapace from orange to pale yellow with black median stripe. Abdomen from light brown to blackish. Legs coloured as carapace. Palp as in Figs 27–30, 32, 50, 56, epigyne as in Figs 20, 31, 33–34.

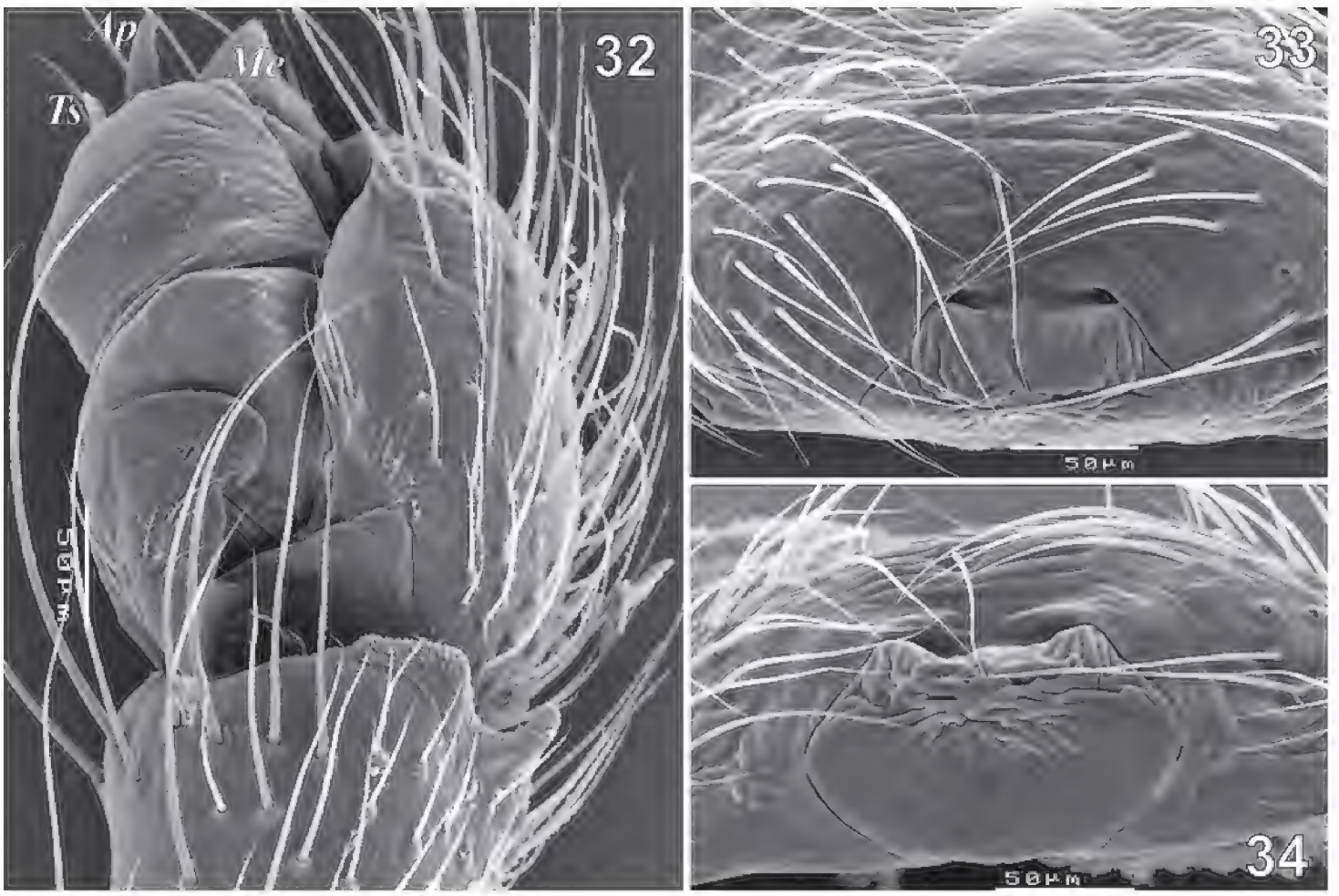
Comments. *T. difficilis* Kulczyński, 1926 was described on the basis of the female holotype from Lake "Kurarotschnoje" (=Kurazhechnoye, ca. 56°10'N, 161°45'E, collected 9.06.1909) and *T. dubius* Kulczyński, 1926 was described on the basis of two females from Lake "Klutschevskoje" (= maybe Klyuchi Vil., c. 60 km from Kurarochnoye Lake). In his descriptions Kulczyński (1926) compared both species with *T. tolli*. Both species were transferred to *Centromerus* (a member of the Micronetinae, a different subfamily) by Reimoser (1919) and this transfer was not contested by Charitonov (1932). Sytschevskaya (1935), who collected in the same places, suggested that both species, in addition to *Gongylidium vile* Kulczyński, 1885 (from Petropavlovsk-Kamchatski) maybe conspecific with *T. tolli*. Holm (1973) agreed with Sytschevskaya



Figures 27–31. Copulatory organs of *Tmeticus tolli.* **27** male palp, retrolateral view **28** palpal tibia, dorso-lateral view **29** bulbus, prolateral view **30** – whole male palp, retrolateral view **31** epigyne, ventral view.

(1935). Eskov (1994) and Mikhailov (1997) listed the three species as synonyms of *T. tolli,* but formal synonymies were not proposed. In addition, *G. vile* (listed as *Oedothorax vilus* in Platnick's (2010) catalogue has date priority over *T. tolli*.

Although Kulczyński (1885) compared *G. vile* with European *Oedothorax* (the epigyne of *T. tolli* is very similar to those in *Oedothorax*), he mentioned the colour of the carapace "*flavido-rufo*" (yellow-red = orange), which is typical for *T. tolli* and such coloration is absent from *Oedothorax* species. Furthermore, no *Oedothorax* species has been recorded from Kamchatka. In order to retain stability we suggest suppression of the name *Gongylidium vile* Kulczyński, 1885, because it does not appear in the literature (except for catalogues and nomenclatorial notes), whereas *T. tolli* has been used in more than 25 publications by more than 10 different authors during the past 50 years (Holm 1973; Eskov 1988, 1994; Koponen & Marusik 1992; Marusik et al. 1992, 1993, 2002; Marusik 1993, 2005a-b; Rybalov et al. 2002; Hormiga 2000; Tanasevitch 2006; Trilikauskas & Tanasevitch 2006; etc.). We agree with Eskov about the status of these species and here formally propose three new synonymies: *Gongylidium vile* Kulczyński, 1885, syn. n. = *Tmeticus difficilis* Kulczyński, 1926, syn. n. and *Tmeticus dubius* Kulczyński, 1926, syn. n. = *Tmeticus tolli* Kulczyński, 1908.



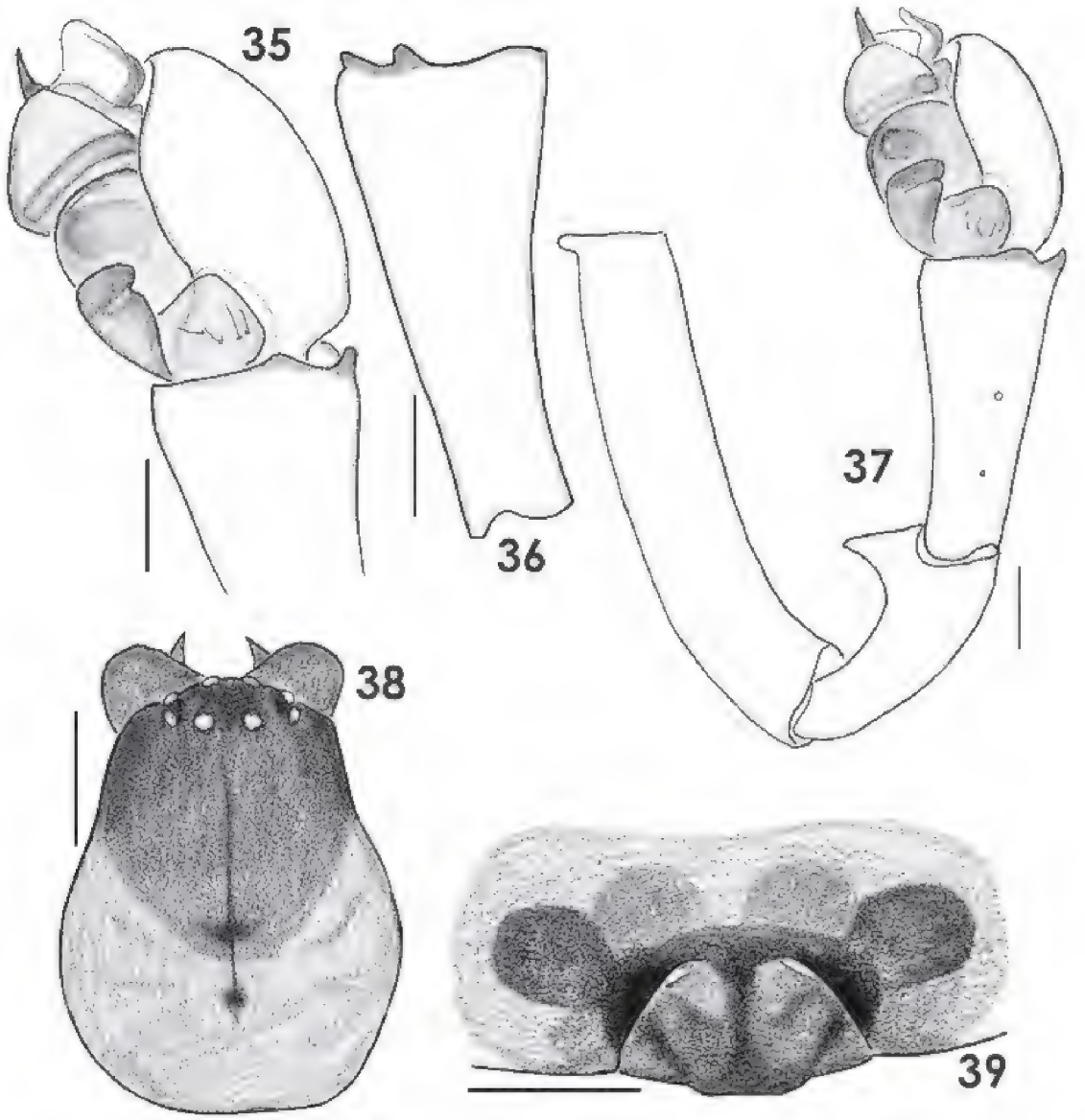
Figures 32–34. Copulatory organs of *Tmeticus tolli*. **32** male palp, retrolateral view **33** epigyne, ventral view **34** epigyne, caudal view. Abbreviations: ***Ap*** – anterior radial process; ***Me*** – embolic membrane; ***Ts*** – tegular sac.

Distribution. This species is distributed east of Yenisei (Eskov 1994) to Chukotka and southward to central Mongolia (Marusik & Logunov 1999: sub. *T. affinis*), Maritime Province of Russia (present data) and northern Sakhalin (Eskov 1994). *T. tolli* also occurs in northeastern China. YM saw one female specimen of this species in the collection of Baoding University (China).

***Tmeticus nigriceps* (Kulczyński, 1916)**
Figs 18, 23–24, 35–44, 52, 55

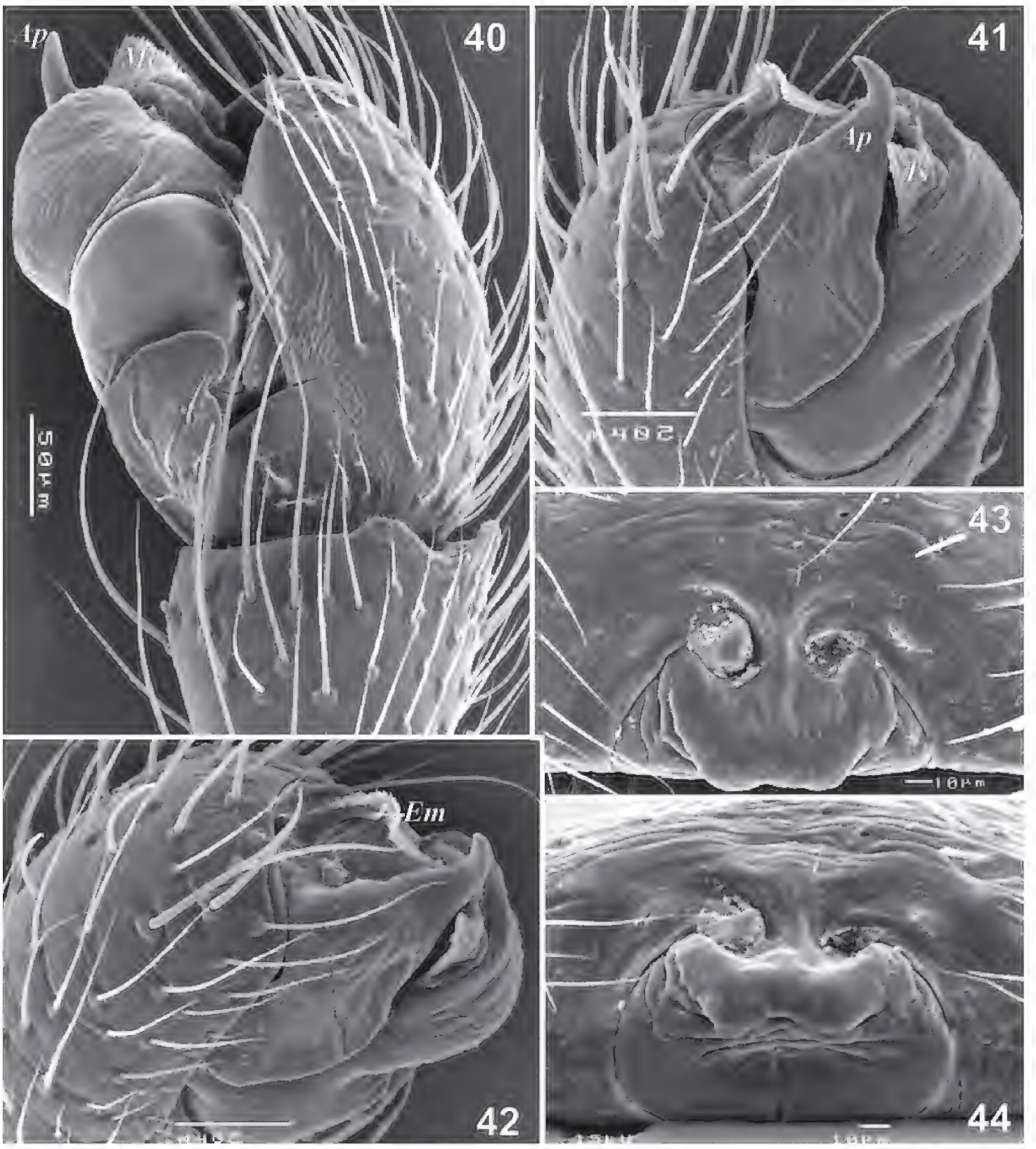
Gongylidium n. Kulczyński, 1916: 8, pl. 1, f. 10 (♀).
T. n.: Holm, 1973: 89.
T. n.: Eskov, 1994: 107.
Misidentifications (all refer to *Zornella cultrigera* (L. Koch, 1879) see Holm (1973):
Gongylidium nigriceps: Tullgren, 1955: 355, f. 56 (♀).
Gongylidium nigriceps: Hauge, 1969: 6, f. 12 (♀).

Material examined. RUSSIA: ***Arkhangel'sk*** Area: 1♂ (IBPN), Barents Sea, Dolgiy Il-sand, 69°12'N, Summer 2004 (O.L. Makarova). ***Polar Ural:*** 1♂ (ZMUT), Oktyabrskij, Ob River shore, *Salix viminalis* vegetation, 12.-13.7.1994 (S. Koponen); 1♀ (PSU-95),



Figures 35–39. Copulatory organs and male carapace of *Tmeticus nigriceps*. **35** male palp, retrolateral view **36** palpal tibia, dorso-lateral view **37** whole male palp, retrolateral view **38** male carapace, dorsal view **39** epigyne, ventral view. (scale bar 0.1 mm).

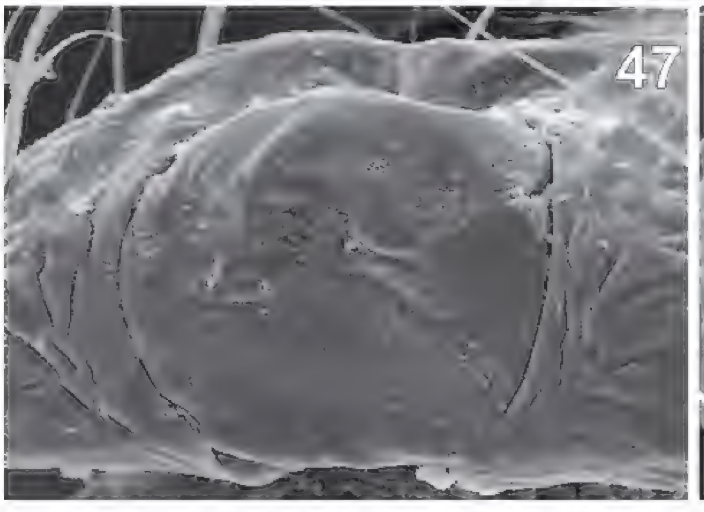
North Ural expedition by Fridolin, sample 36, Sob' River right bank, 4.07.1925 (V. Fridolin). ***Yamal*** Peninsula: 1♂ 5♀ (ZMMU), Yorkugayakha River, environs of "Canary" trading station, riparian willow stand, 08.07.2002 (D. Osipov); 4♂ 1♀ (ZMMU), south Yamal, Shchuchye Vill, Shchuchya River (A.L. Tikhomirova); 1♂ (PSU-96), South Yamal, Khadyta-Yakha River, meadow valley, pitfall traps, 8.08.1982 (S.L. Esyunin); 1♂ 1♀ (PSU-97), same locality, river bank, drift, 26.07.1981 (S.L. Esyunin). ***Taimyr*** Peninsula: 1♂ 1♀ (ZMMU), Taimyr Reserve, Novaya River, Ary-Mas Site, 25.07.1992 (A.B. Ryvkin); 10♂ 1♀ (ZMMU), SW Taimyr, Nyapan' Ridge, 70°09'N 87°47'E, *Carex*-moss bog, pitfall trapping, 1–10.08.1999 (D. Osipov); 3♂ (ZMMU), NW shore of Pyasino Lake, 70°04'54"N 87°32'12"E, *Carex* bog with sphagnum tussocks, 10–20.07.1999 (D. Osipov); 3♂ 2♀ NW shore of Pyasino Lake, 70°04'54"N 87°32'17"E, *Carex* bog with sphagnum tussocks, Summer 1999 (D. Osipov); 2♀ (ZMMU), NW shore of Pyasino Lake, Lazannakh Lake, sandy beach, 70°05'47"N 87°26'28"E, 1–10.07.1999 (D. Osipov). ***Yakutia*:** 2♀ (IBPN), Yana River down flow, environs of Kular Village, 70°35'N, 134°34'E, grass-herb- *Arctagrostis* meadow on the former open mine, Summer, 2000 (N.K.Potapova). ***Chukotka*:** 2♂ (IBPN), western Chukotka, Chaun River mouth part,



Figures 40–44. Copulatory organs of *Tmeticus nigriceps.* **40** male palp, retrolateral view **41** male palp, prolateral view **42** male palp, dorso-prolateral view **43** epigyne, ventral view **44** epigyne, caudal view. Abbreviations: ***Ap*** – anterior radial process; ***Em*** – embolus proper; ***Me*** – embolic membrane; ***Ts*** – tegular sac.

68.810°N 170.432°E, Summer, 1986 (A.S. Ryabukhin); 1♂ (IBPN), western Chukotka, Chaun Bay, Pucheveyem River mouth, 25.07.1985 (A.S. Ryabukhin); 1♂ (IBPN) Lamutskoye Vil., 65°32'39"N 168°51'08"E, along creek, 17.08.1968 (Novikova); 1♂ (IBPN), western Chukotka, Markovo Town, July 1986 (G. Chernova); 1♂ (IBPN), Vulvyveyem River upper flow, Gytlenumkuum Stand, 67°10'N 178°E, 8.06.1988 (Yu.M. Marusik).

Diagnosis. *T. nigriceps* is easily distinguished from the other Palaearctic species by the dark cephalic region contrasting with the reddish thoracic area. Only the Nearctic *T. ornatus* has a similar colour pattern. The male palp is almost undistinguishable from



Figures 45–48. Copulatory organs of *Tmeticus ornatus*. **45** male palp, retrolateral view **46** male palpal patella and tibia, retrolateral view **47** epigyne, caudal view **48** epigyne, ventral view. Abbreviations: ***Tt*** – patellar tooth.

the Siberian *T. tolli* and the Nearctic *T. ornatus*. In addition to the carapace pattern, females can be distinguished by the shape of their epigyne.

Description. ♀ 2.9–3.3, ♂ 2.3–2.7. TmI 0.69–0.72. Carapace orange with dark, blackish cephalic region (Figs 23–24, 38) and chelicera. Legs orange. Abdomen black. Palp as in Figs 35–37, 40–42, 52, epigyne as in Figs 18, 39, 43–44.

Comments. Holm (1973) re-examined the specimens from Sweden identified and recorded as *Gongylidiun nigriceps* by Tullgren (1955) and concluded that they were misidentifications of *Zornella cultrigera* (L. Koch, 1879). The figure of the female epigyne from Norway in Hauge (1969) identified as *G. nigriceps* also refers to *Z. cultrigera.*

Figures 49–53. Retrolateral view of the male palp of *Tmeticus affinis* (**49**), *T. tolli* (**50**), *T. ornatus* (**51**), *T. nigriceps* (**52**) and *Paratmeticus bipunctis* (**53**). (scale bar 0.1 mm).

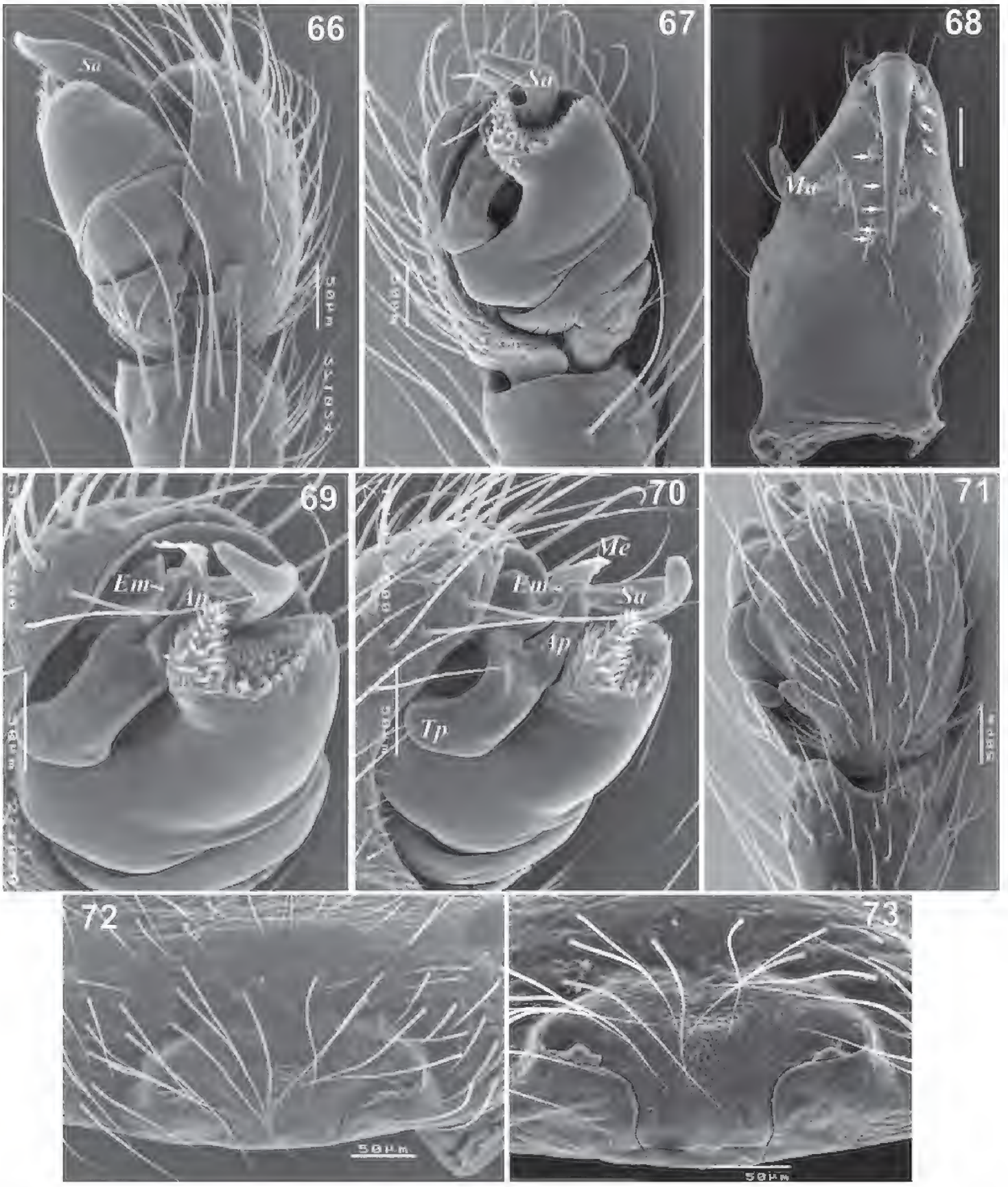
Distribution. This species is known from Dolgiy Island and the Polar Urals to Chukotka (Eskov 1994). It is restricted to the tundra zone.

***Tmeticus ornatus* (Emerton, 1914)**
Figs 17, 21–22, 45–48, 51, 54

Gongylidium o. Emerton, 1914: 263, pl. 8, f. 3 (♂).
T. o.: Bishop & Crosby, 1935: 227, pl. 18, f. 22–26 (♂♀).
T. o.: Paquin & Dupérré, 2003: 122, f. 1284–1286 (♂♀).

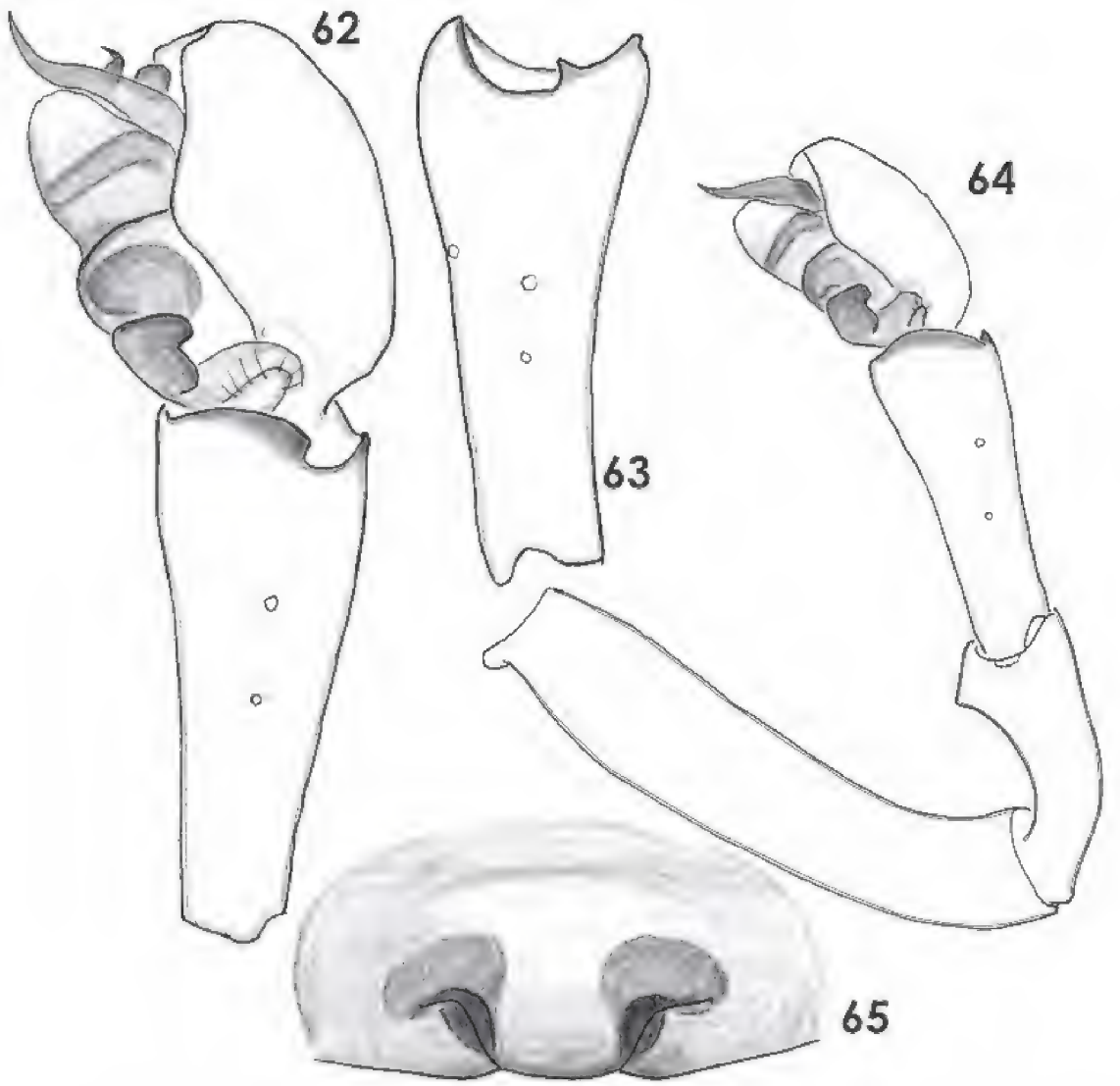
Material examined. CANADA: 4♂ 4♀ (ZMMU), ***Saskatchewan,*** Lady Lake, sedge tops – flooded marsh, 13–15.04.1971 (D.J. Buckle); 3♂ 3♀ (ZMUT), same locality, marsh, late April, 1978 (J.V. Buckle).

Figures 54–61. Embolic division of *Tmeticus ornatus* (**54**), *T. nigriceps* (**55**), *T. tolli* (**56**), *Oreoneta* sp. (**57**), *Lophomma punctatum* (**58**), *Paratmeticus bipunctis* (**59–60**) and *T. affinis* (**61**). Abbreviations: ***Ap*** – anterior radial process; ***Em*** – embolus proper; ***Ma*** – mastidion; ***Me*** – embolic membrane; ***Pt*** – protegulum; ***Sa*** – distal suprategular apophysis; ***Tp*** – tailpiece; ***Ts*** – tegular sac.



Figures 62–65. Copulatory organs of *Paratmeticus bipunctis.* **62** male palp, retrolateral view **63** male palpal tibia, dorso-retrolateral view **64** whole male palp **65** epigyne, ventral view.

Diagnosis. Differs from *T. affinis*, which also occurs in the Nearctic Region, by the carapace colour (black cephalic region and red-orange thoracic area in *T. ornatus*, carapace uniformly brown in *T. affinis*). The males are easily separated by their tibial apophyses (one apophysis with a claw-like processes in *T. affinis*



Figures 66–73. Copulatory organs and male chelicera of *Paratmeticus bipunctis*. **66** male palp, retrolateral view **67** male palp, ventral view **68** male chelicera inner view **69** male palp, from above **70** male palp, prolateral view **71** male palp, dorsal view **72–73** epigyne, ventral and caudal view. Arrows show the cheliceral teeth. Abbreviations: ***Ap*** – anterior radial process; ***Em*** – embolus proper; ***Ma*** – mastidion; ***Me*** – embolic membrane; ***Sa*** – distal suprategular apophysis; ***Tp*** – tailpiece; ***Ts*** – tegular sac.

and two separate apophyses in *T. ornatus*); the females have distinctly different epigynes.

Description. ♂ 2.5–3.3, ♀ 2.8–35. TmI 0.73–0.78. Carapace orange with darker cephalic region. Abdomen dark. Palp as in Figs 45–46, 51, 54. Epigyne as in Figs 17, 47–48.

Distribution. This species has a trans-Nearctic distribution, recorded from British Columbia to Quebec and south to New York (Buckle et al. 2001). It does not occur north of 55°N and has a more southern distribution in comparison to the Palaearctic *T. affinis*, *T. tolli* and *T. nigriceps*.

Species Incertae Sedis

The three species from Japan assigned to *Tmeticus* remain unstudied and belong elsewhere (see 'Comments' below).

Tmeticus neserigonoides Saito & Ono, 2001

T. n. Saito & Ono, 2001: 9, f. 15–20 (♂♀).
T. n.: Ono et al., 2009: 304, f. 638–642 (♂♀).

Comments. Judging from the available figures, this species might belong in *Tmeticus.* The male has a long palp with a patellar tooth. However, the chelicera appears to lack a mastidion and the tibial apophyses are absent. Figures of the male palp are unclear, TmI index (0.59) is lower than in *Tmeticus* species (>0.63).

Tmeticus nigerrimus Saito & Ono, 2001

T. n. Saito & Ono, 2001: 13, f. 26–31 (♂♀).
T. n.: Ono et al., 2009: 304, f. 643–647 (♂♀).

Comments. This species is clearly not related to *T. affinis* or other members of the genus due to the short palpal patella lacking a tooth in the male, embolic division of a different shape, the relatively long tibial apophysis, lack of a mastidion, epigyne with a septum and some other additional characters. The correct generic placement remains unclear.

Tmeticus vulcanicus Saito & Ono, 2001

T. v. Saito & Ono, 2001: 11, f. 21–25 (D♂♀).
T. v.: Ono et al., 2009: 304, f. 648–652 (♂♀).

Comments. This species is clearly not related to *T. affinis* or other members of the genus due to the short palpal patella lacking a tooth in the male, embolic division of a different shape (anterior radical process absent), and some other characters. The correct generic placement remains unclear.

Paratmeticus gen. n.

urn:lsid:zoobank.org:act:3F57381F-374C-4D90-9312-24A8419BF422

Type species. *Oedothorax bipunctis* Bösenberg & Strand, 1906.

Etymology. Prefix "Para"- indicates the resemblance of this genus to *Tmeticus.* The gender is masculine.

Diagnosis. The new genus is easily distinguished from the similar *Tmeticus* by lacking distinct tibial apophyses, and in having the papillate tegular sac larger than the protegulum, a slightly twisted embolic division, a sharply pointed embolic membrane

and a large distal suprategular apophysis, longer than the embolic division. In contrast to *Tmeticus*, the median plate of the epigyne in the new genus is widest in the anterior region, rather than in the posterior region.

Description. Medium-sized erigonine spiders. Uniformly coloured, male carapace without modifications, male chelicera with mastidion, inner row with 4 inner teeth and 5 outer teeth (all smaller than inner teeth). TmI 0.63–0.65. Male palp elongate, with patella as long as tibia, tibia lacks apophyses, distal suprategular apophysis longer than embolic division; embolic division slightly twisted with two arms: anterior radical process and embolus proper; embolus parallel to process with lamellate basal process; epigyne without cavity, median plate widest anteriorly.

Composition. The type species only.

Paratmeticus bipunctis (Bösenberg & Strand, 1906), comb. n.

Figs 12–14, 53, 59–60, 62–73

Oedothorax b. Bösenberg & Strand, 1906: 162, pl. 12, f. 258 (♀).
Tmeticus japonicus Oi, 1960: 152, f. 50–51 (♂).
Tmeticus japonicus: Chikuni, 1989: 58, f. 56 (♂♀).
Tmeticus japonicus: Eskov, 1994: 107.
Tmeticus b.: Saito & Ono, 2001: 7, f. 10–14 (S, ♀).
Tmeticus b.: Ono et al., 2009: 304, f. 634–637 (♂♀).

Material examined. RUSSIA: ***Sakhalin*** Island: 1♂ 4♀ (IBPN), Okha Dist., 5–7 km N of Kolendo Vil., 22–23.08.1991 (A.M. Basarukin); 1♂ 2♀ (IBPN), Pil'tun Bay, 06.-0.7.1991 (A.M.Basarukin); 1♂ 1♀ (IBPN), Okha Dist., Ten'ga River, May 1987 (A.M. Basarukin); 10♂ 26♀ (IBPN), Korsakov Dist., Tunaiga Lake south shore, 26.09.1991 (A.M.Basarukin). ***Kuril*** Isles, 4♂ 3♀ (IBPN), Paramushir Isl. NE shore, environs of Severo-Kuril'sk, 50°40'N 156°06'E, 10.08–15.09.1996 (Yu.M. Marusik); 2♂ 1♀ (ZMMU), Iturup Island, Dobroye Nachalo Bay, Lesozavodskoye, mixed forest, 14.08.1994 (K.Yu. Eskov). ***Kamchatka*** Peninsula, 6♂ 2♀ (IBPN), 10–12 km N of Paratunka Vil., Yelizovo Forestry, 53.050°N 158.225°E, 15–28.07.2004 (A.S. Ryabukhin).

Description. Well described by Saito & Ono (2001) and Ono et al. (2009). Total length: ♂ 2.5–3.2, ♀ 2.8–3.5. Carapace 1.29–1.57 long, 1.0–1.24 wide, slightly larger in males. Chelicera in male with mastidion. TmI 0.63–0.65. Carapace dirty brownish, sternum and chelicerae brown. Abdomen dark grey-blackish. Palp as in Figs 53, 59–60, 62–67, 69–71, epigyne as in Figs 14, 65, 72–73.

Distribution. Kamchatka (south part), 8 islands in Kuril Archipelago (Shikotan, Kunashir, Iturup, Urup, Simushir, Ketoi, Shiashkotan, Paramushir, but seems to occur on all large islands); Sakhalin and Japan (Hokkaido, Honshu and Kyushu).

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